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# PAPERS READ

BEFORE THE

# ROYAL GEOGRAPHICAL SOCIETY.

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## I.—*Report to the Secretary of the United States Navy, at Washington, of the Expedition in search of Sir John Franklin, during the years* 1853-4-5, *with a Chart, showing the Discoveries made in the Arctic Regions.* By Elisha Kent Kane, M.D., U.S.N. (*Gold Medallist*).

*Read,* January 14, 1856.

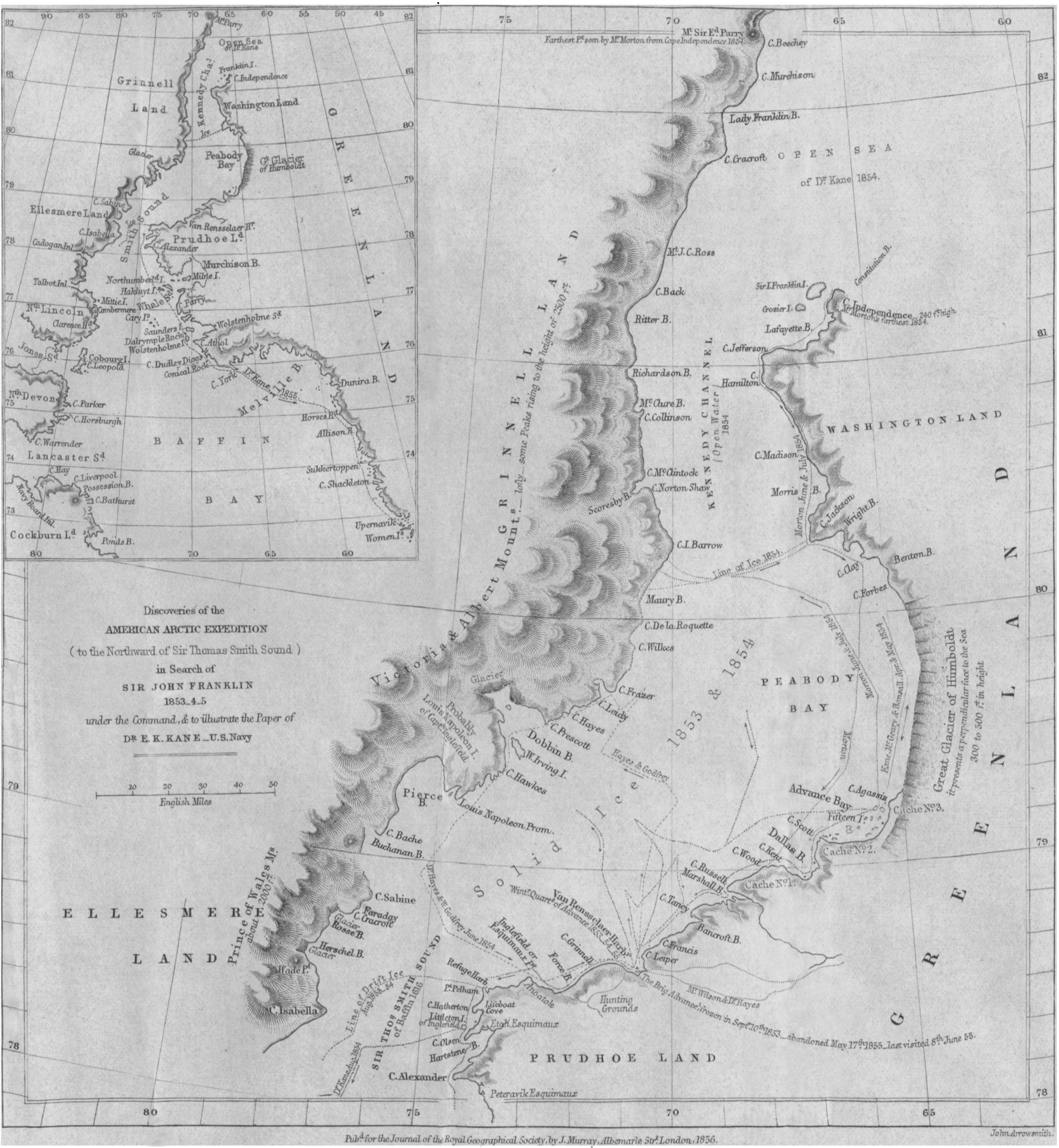
*To the Hon. J. C. Dobbin, Secretary of the Navy.*

Sir,—The expedition to which I was appointed by orders from the Department, under date of the 27th of November, 1852, left New York in the brig 'Advance,' of 120 tons burden, on the 30th of May following. Our company consisted of eighteen persons in all, of whom ten were regularly attached to the naval service, the others being engaged by private liberality.

Our destination was to the highest penetrable point of Baffin Bay, from which, according to instructions from the Department, we were to attempt a search for the missing vessels of Sir John Franklin. This region was then entirely unexplored, and it was selected on that account.

The copies which I annex of my letters, heretofore addressed to the Department, indicate my course up to the time of leaving Upernavik, in lat. 72° 47′ N. It will be seen from them that I engaged at that point an Esquimaux hunter and an interpreter, deeming their aid essential to the success of our expedition. I had also purchased supplies of fresh meat and fish, which were carefully dried and set aside to meet emergencies.

On reaching Melville Bay I found the shore-ices so decayed that I did not deem it advisable to attempt the usual passage along the fast floes of the land, but stood directly to the northward and westward as indicated by my log, until I met the middle pack. Here we headed nearly direct for Cape York, and succeeded in crossing the bay without injury, in ten days after first



Discoveries of the
AMERICAN ARCTIC EXPEDITION
( to the Northward of Sir Thomas Smith Sound )
in Search of
SIR JOHN FRANKLIN
1853_4_5
under the Command, & to illustrate the Paper of
Dr. E. K. KANE _ U.S. Navy

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John Arrowsmith.

encountering the ice. On the 7th of August we reached the headland of Sir Thomas Smith Sound, and passed the highest point attained by my predecessor, Captain Inglefield, R.N.

So far our observations accorded completely with the experience of this gallant officer in the summer of 1852, a fresh breeze with a swell setting in from the southward and westward, marks upon the rocks indicating regular tides, no ice visible from aloft, and all the signs of continuous open water.

As we advanced, however, a belt of heavy stream-ice was seen, an evident precursor of drift, and a little afterwards it became evident that the channel to the northward was obstructed by a drifting pack.

We were still too far to the south to carry out the views I had formed of our purposed search, and it became my duty therefore to attempt the penetration of this ice. Before doing this I selected an appropriate inlet for a provision depôt, and buried there a supply of beef, pork, and bread. At the same place we deposited our Francis' life-boat, covering it carefully with wet sand, and overlaying the frozen mass with stones and moss. We afterwards found that the Esquimaux had hunted around this inlet, but the *cache* which we had thus secured as our own resort, in case of emergency, escaped detection.

No one having yet visited this coast I landed on the most prominent western headland of a group of small islands, the Littleton Islands of Inglefield, and erected there a flag-staff and beacon. Near this beacon, according to preconcerted arrangement, we deposited official despatches and our private letters of farewell.

My first design in entering the pack was to force a passage to the North, but after reaching lat. 78° 45′ we found the ice hugging the western shore, and extending in a drifting mass completely across the channel. This ice gradually bore down upon us, and we were forced to seek the comparatively open spaces of the eastern coast. Still we should have inevitably been beset, and swept to the south, but for a small land-locked bay, under whose cliffs we found a temporary asylum. We named it Refuge Inlet; it carries 50 fathoms of water within a biscuit toss of its northern headland, and but for a glacier, which occupies its inner curve, would prove an eligible winter harbour.

We were detained in this helpless situation three valuable days, the pack outside hardly admitting the passage of a boat. But on the 13th, fearing lest the rapidly advancing cold might prevent our penetrating farther, we warped out into the drift and fastened to a grounded berg.

That the Department may correctly apprehend our subsequent movements, it is necessary to describe some features peculiar to our position. The coast trended to the N.N.E. It was metamorphic in structure, rising in abrupt precipitous cliffs of basaltic greenstone from 800 to 1200 feet in perpendicular height. The shore at the base of this wall was invested by a permanent belt of ice, measuring from 3 to 40 yards in width, with a mean summer thickness of 18 feet. The ice clung to the rocks with extreme tenacity, and unlike similar formations to the south, it had resisted the thawing influences of summer. The tidal currents had worn its seaward face into a gnarled mural escarpment, against which the floes broke with splendid displays of force, but it still preserved an upper surface comparatively level, and adapted as a sort of highway for further travel. The drifting ice, or pack outside of it, was utterly impenetrable; many bergs, recently discharged, were drifting backward and forward with the tides, and thus pressing upon the ice of the floes, had raised up hills 60 to 70 ft. high. The mean rise and fall of the tide was 12 ft., and its rate of motion 2½ knots an hour.

In this state of things, having no alternative but either to advance or to discontinue the search, I determined to take advantage of a small interspace which occurred at certain stages of the tide, between the main pack and the coast, and, if possible, press through it. I was confirmed in this purpose by my knowledge of the extreme strength of the 'Advance,' and my confidence in the spirit and fidelity of my comrades.

This effort occupied us until the 1st September, and was attended by the usual dangers of ice penetration. We were upon our beam ends whenever the receding tides left us in deficient soundings; and on two of such occasions it was impossible to secure our stoves so as to prevent the brig from taking fire. We reached lat. 78° 43′ on the 29th August, having lost a part of our starboard bulwarks, a quarter boat, our jibboom, our best bower anchor, and about 600 fathoms of hawser, but with our brig, in all essentials, uninjured.

We were now retarded by the rapid advance of winter; the young ice was forming with such rapidity that it became evident that we must soon be frozen in. At this juncture my officers addressed to me written opinions in favour of a return to a more southern harbour; but as such a step would have cost us our dearly purchased progress, and removed us from the field of our intended observations, I could not accede to their views. I determined therefore to start on foot with a party of observation to seek a spot which might be eligible as a starting point for our future travel, and, if such a one were found, to enter at once upon the full duties of search.

This step determined on, the command of the brig was committed to Mr. Olsen, and I started on the 29th August with a detachment to carry a whale-boat and sledge. The ice soon checked the passage of our boat, but I left her, and proceeded with a small sledge along the ledge of ice, which, under the name of "Icefoot," I have before described as clinging to the shore.

We were obliged, of course, to follow all the indentations of the coast, and our way was often completely obstructed by discharged rocks from the adjacent cliffs. In crossing a glacier we came near losing our party, and were finally compelled to abandon the sledge and continue our journey on foot. We succeeded, however, in completing our work, and reached a projecting cape, from which, at an elevation of 1100 feet, I commanded a prospect of the ice to the N. and W. as high as lat. 80°. A black ridge running nearly due N., which we found afterwards to be a glacier, terminated our view along the Greenland coast to the eastward. Numerous icebergs were crowded in masses throughout the axis of the channel, and as far as our vision extended the entire surface was a frozen sea. The island named Louis Napoleon, on the charts of Captain Inglefield, does not exist. The resemblance of ice to land will readily explain the misapprehension.

The result of this journey, although not cheering, confirmed me in my intention of wintering in the actual position of the brig, and I proceeded immediately on our return to organise parties for the fall, with a view to the establishment of provision depôts to facilitate the farther researches of the spring. In selecting sites for these, and the attendant travel, our parties passed over more than 800 m. The coast of Greenland was traced 125 m. to the N. and E., and three *caches* were established at favourable points. The largest of these (No. 3 of Chart) contained 800 lbs. of pemmican; it was located upon an island in lat. 79° 12′ 6″, long. 65° 25′, by Messrs. McGeary and Bonsall. These operations were continued until the 20th November, when the darkness arrested them.

Our brig had been frozen in since the 10th of September. We had selected a harbour near a group of rocky islets in the south-eastern curve of the bay, where we could establish our Observatory, and had facilities for procuring water, and for daily exercise. We were secure too against probable disturbance during the winter, and were sufficiently within the tidal influences to give us a hope of liberation in the spring.

As we were about to winter higher N. than any previous expedition, and, besides a probable excess of cold, were about to experience a longer deprivation of solar light, the arrangements for the interior were studied carefully.

The deck was housed in with boards, and caulked with oakum; a system of warmth and ventilation was established; our permanent lamps were cased with chimneys to prevent the accumulation of smoke; cooking, ice-melting, and washing arrangements were minutely cared for. The dogs were kennelled in squads, and they were allowed the alternate use of snow-houses, and of the brig, as their condition might require. Our domestic system was organised with the most exact attention to cleanliness, exercise, recreation, and withal to fixed routine.

During the winter which followed, the sun was 120 days below the horizon, and owing to a range of hills towards our southern meridian, the maximum darkness was not relieved by apparent twilight even at noon day.

The atmospheric temperatures were lower than any that had been recorded by others before us. We had adopted every precaution to secure accuracy in these observations, and the indications of our numerous thermometers, alcoholic, etherial, and mercurial, were registered hourly.

From them it appears that the mean annual temperature of Van Rensselaer harbour, as we named our winter home, is lower than that of Melville Island, as recorded by Parry, by two degrees. In certain sheltered positions the process of freezing was unintermitted for any consecutive 24 hours throughout the year.

The lowest temperature was observed in February, when the mean of eight instruments indicated minus 70° Fah. Chloroform froze, the essential oils of sassafras, juniper, cubebs, and winter green were resolved into mixed solid and liquid ; and on the morning of February 24th we witnessed *chloric ether* congealed for the first time by a natural temperature.*

In the early part of this winter I erected an astronomical observatory, and mounted our "transit" and theodolite upon pedestals of stone cemented by ice. Great care was taken by Mr. Sontag, the astronomer to the expedition, in determining our geographical position. The results for the determination of longitude, as based upon moon culminations, are in every respect satisfactory ; they are corroborated by occultations of planets and the late solar eclipse of May 1855. An occultation of Saturn simultaneously observed by Mr. Sontag and myself at temperatures of – 60° and – 53 differed but two seconds. This is the lowest temperature at which such an observation has ever been taken.

The position of our observatory may be stated as in lat. 78° 37′, long. 70° 40′ 6″. A room, artificially heated, was attached to the observatory as a magnetic station. The observations were both absolute and relative, and were sustained by a corps of volunteers among the officers.

A strong tendency to tonic spasm, probably induced by the lengthened cold and darkness, was the chief trial of our party.

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* January 17th, 1834, Sir George Back's mean temperature at Fort Reliance, Great Slave Lake, was 70°.

General disease was readily controlled by a careful hygiene; and the unremitting and intelligent exertions of Dr. J. J. Hayes, the surgeon of the expedition, kept scurvy in complete subjugation.

But this anomalous form of spasmodic disease was encountered with difficulty. It extended to our dogs, assuming the aspect of tetanus; and in spite of every effort no less than 57 perished, many of them with symptoms not unlike those of hydrophobia.

The loss of these animals interfered seriously with my original scheme of search. They had been collected at various points of the coast of Greenland, and had been trained for their office with extreme care and labour. I had contemplated employing them in following the coast, and with this view had devoted the labours of the fall to the organization of a chain of depôts. Now, however, a new system of operations was to be established, with different appliances. New sledges were to be built, and cooking utensils and field equipments provided, suited to larger parties, and of more portable character. The latter period of darkness was entirely occupied with these new preparations.

Our party was unhappily too small for an extended system of field operations by unassisted human labour, and the only remaining hope of continuing the search was to be found in a passage through or over the great ice-fields to the N.—an effort the success of which was rendered very doubtful by the crowded bergs and distorted ice of this frozen area. With this object I organised a party of our strongest men (all volunteers), under my personal charge, and sent an advanced corps, under Mr. Brooks, the energetic first officer of the expedition, to place a relief cargo of provisions at 10 days' journey from the brig.

On the 27th of March, the ninth day of their absence, a heavy gale from the N.N.E. broke upon this party. The thermometer fell to 57° below zero, and the ice ridges (hummock lines) were so obstructed by snow-drift that they could not deposit their stores beyond 50 m. from the brig. Four of the most valuable members of the party, Messrs. Brooks and Wilson, Jefferson Baker, and Peter Schubert, were frozen at the extremities; and a single man being left to attend them, the others returned to the brig in a state of extreme exhaustion. The name of the brave fellow who remained with his comrades was Thomas Hickey, an Irishman.

The main company, under my own command, started at once for the floes, with but little hope of rescuing our comrades. Mr. Olsen, one of the returned party, volunteered to guide us. He was sewed up in furs, and strapped upon a small sledge, which we dragged after us; but symptoms of mental disturbance rendered his heroism unavailing; and but for striking the trail of the party we must all of us have perished.

On this occasion I was deeply touched by the confidence of the disabled men in the certainty of their relief. Although they were nearly concealed by snow-drift, and dependent for warmth upon their sleeping bags, they had patiently and hopefully awaited our arrival. The discovery of their small canvas tent in the midst of these immense plains of ice I must remember as providential.

I mention gratefully the endurance and self-denial of my comrades upon this fearful march. They had been 81 out of 84 hours without sleep, and had halted for the purpose of melting ice for drink. The tendency to sleep could only be overcome by mechanical violence, and when at last we got back to the brig, still dragging the wounded men instinctively behind us, there was not one whose mind was found to be unimpaired.

This disastrous effort cost us two valuable lives—Jefferson Baker and Peter Schubert. The first of these was a native of Delaware county, Pennsylvania, a trustworthy and faithful follower; he died of locked jaw thirty-six hours after his return to the brig. The other was cook to the expedition, and a volunteer upon the duty which caused his death. Our little party had throughout, from the nature of the service, been in close relations with one another, and these men are remembered by us all with sympathy and respect.

As soon after this as the health of our company could justify, I set out with my original party to renew the attempt from a higher point on the Greenland coast, carrying with me an india-rubber boat. This journey was undertaken in the latter part of April and continued into May. It was followed by others, which extended the search almost without intermission until the 10th of July. These journeys may be thus summed up:—March, Mr. Brooks and Dr. Kane; April, May, Dr. Kane, Messrs. McGeary and Bonsall; June, Dr. Hayes and William Godfrey; June, July, William Morton and Hans Heindrick, our native hunter.

The arrival of the Esquimaux in April enabled us to add four dogs to the three that remained of our original stock, and thus to equip a slender team. The value of these animals for Arctic ice-travel can hardly be over-estimated. The earlier journeys of March, April, and May proved incomparably more arduous and exposing than those performed with dogs, while their results were entirely disproportionate to the labour they cost us. It was invariably the case that the entire party on its return from the field passed at once upon the sick list.

Out of nearly 3000 miles of travel no less than 1100 were made by the dog-sledge, and during the fall, winter, and spring of the ensuing year (1854-55), I made in person no less than 1400 miles with a single team.

Setting out from our winter quarters, three expeditions effected the passage of the bay. 1. To the N. with Messrs. McGeary and

Bonsall along the base of a great glacier, which issued from the coast of Greenland in lat. 79° 12′.* 2. To the s.w. by Dr. Hayes and William Godfrey. 3. To the N.W. and along the shores of a new channel by W. Morton and our Esquimaux-hunter, Hans. The original reports of these journeys, with my own observations, are now under seal and subject to the orders of the Department. I give only a summary of results, referring for particulars to the Track Chart, projected on the spot from the original field notes, which I have the honour to transmit with this Report.

Greenland reaches its farthest western point at Cape Alexander in the neighbourhood of lat. 78° 10′ N., and after passing long. 70° W. of Greenwich, trends nearly due E. and W. (E. 20° N.), This northern face of Greenland is broken by two large bays, at the base of which are numerous granitoid islands, which, as you approach long. 65° W., assume the form of an archipelago. Fifteen islands were surveyed and located here. The aspect of the coast is imposing, abutting upon the water-line in headlands, from 800 to 1400 ft. high; and one range of precipice presenting an unbroken wall of 45 m. in length. Its geological structure is of the olden red sandstones, and silurian limestones overlying a primary basis of massive syenites. The sandstones to the S. of 78° seem to form the floor of the bay. They are in series with intercalated greenstones and other ejected plutonic rocks, and form the chief girders of the coast. Upon this and collateral subjects I shall, with your permission, address a special report to the Department.

The farther progress of our parties towards the Atlantic was arrested by a great glacier, which issued in lat. 79° 12′ N., long. 64° 20′ W., and ran directly N. This forms an insuperable barrier to exploration in this direction. It is continuous with the *mer de glace* of interior Greenland, and is the largest true glacier known to exist. Its great mass adapts itself to the configuration of the basis-country which it overlies. Its escarpment, abutting upon the water, presents a perpendicular face, varying from 300 to 500 ft. in height.

The lines of crevasse and fracture are on an unexampled scale of interest. The bergs, which are ejected in lines, arrange themselves in a sort of escalade, which confers a character of great sublimity upon the landscape.

It was followed along its base and traced into a new and northern land trending far to the W. This land I have named *Washington.* The large bay which separates it from the coast of Greenland and the glacier I have described bears on my chart the name of our liberal countryman and contributor to the expenses of the expedition, Mr. George Peabody.

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* A copy of this glacier, as surveyed by me in 1855, accompanies this Report.

The coasts of this new territory adjoining Peabody Bay have been accurately delineated by two parties, whose results correspond. Its south-western cape is in lat. 80° 17′, by observation with artificial horizon. Its longitude, by chronometer and bearings, is 66° 42′ w. of Greenwich. The cape was doubled by William Morton and our Esquimaux with a team of dogs, and the land to the N. traced until they reached the large indentation named Constitution Bay. The whole of this line was washed by open water, extending in an iceless channel to the opposite shores on the w. This western land I have inscribed with the name of Henry Grinnell.

The course of this channel at its southern opening was traced by actual survey in a long horseshoe curve, sharply defined against the solid ice of Smith Sound, and terminating at its extremes against two noble headlands about 40 m. apart. The western coast was followed in subsequent explorations to a mural face of 900 ft. elevation, preserving throughout its iceless character. Here a heavy surf, beating directly against the rocks, checked our future progress.

This precipitous headland, the farthest point attained by the party, was named Cape Independence It is in lat. 81° 22′ N., and long. 65° 35′ w. It was only touched by William Morton, who left the dogs and made his way to it along the coast. From it the western coast was seen stretching far towards the N. with an iceless horizon and a heavy swell rolling in with white caps. At a height of 240 ft. above the sea this great expanse still presented all the appearance of an open and iceless sea. In claiming for it this character I have reference only to the facts actually observed, without seeking confirmation or support from any deduction of theory. Among such facts are the following :—

1. It was approached by a channel entirely free from ice, having a length of 52 and a mean width of 36 geographical m.
2. The coast ice along the water-line of this channel had been completely destroyed by thaw and water action, while an unbroken belt of solid ice, 125 m. in diameter, extended to the s.
3. A gale from the N.E. of 54 hours in duration brought a heavy sea from that quarter without disclosing any drift or other ice.
4. Dark nimbus-clouds and water-sky invested the north-eastern horizon.
5. Crowds of migratory birds were observed thronging its waters.

Two islands on the threshold of this sea, the most northern islands known, bear the names of Sir John Franklin and his associate, Capt. Crozier, the leaders of the gallant party of which we had been in search.

To the north-west, the coasts became mountainous, rising in truncated cones like the Magdalena cliffs of Spitzbergen. The farthest distinctly sighted point was a lofty mountain bearing N. 5° E. (solar); its latitude by estimate and intersection 82° 30′. Its longitude as thus determined would give 67° W. (approximative).

I would suggest for it the name of the late Sir Edward Parry, who, as he has carried his name to the most northern latitude yet reached, should have, in this the highest known northern land, a recognition of his pre-eminent position among Arctic explorers.

The extension of the American coast to the south-west as it appears upon the chart, was the work of Dr. Hayes and William Godfrey, renewed and confirmed by myself in April of the present year. It completes the survey of the coast as far as Cape Sabine of Captain Inglefield. The land is very lofty, sometimes rising at its culminating peaks to the height of 2500 ft. The travel along the western and north-western coast was made for the most part upon the ice-foot. One large bay in lat. 79° 40′,[*] long. 73° by estimate, extended many miles into the interior, and was terminated by a glacier. A large island occupies the south-western curve of that bay.

A summary of the operations of the parties will therefore comprehend—

1. The survey and delineation of the north coast of Greenland to its termination by the great glacier.
2. The survey of this glacial mass and its extension northward into the new land named Washington Land.
3. The discovery of a large channel to the north free from ice and leading into an open and expanding area equally free. The whole embraces an iceless area of 4200 m.
4. The discovery and delineation of a large tract of land forming the extension northward of the American continent.
5. The completed survey of the American coast to the south and west as far as Cape Sabine, thus connecting our survey with the last determined position of Captain Inglefield, and completing the circuit of the Straits and bay heretofore known at their southernmost opening, as Smith Sound.

The summer of 1854 had brought with it few changes, bearing towards the liberation of our brig. The melted snows did not run in the water-channels until the 30th of June, and our limited Flora showed a tardy and inauspicious season.

On the 12th of July the ice being still unbroken as far as Anoatok, I set out in a whale-boat with five volunteers to communicate, if possible, with our English brethren whom we supposed to be at Beechey Island. The declining state of our resources suggested this attempt, although it promised many difficulties.

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[*] 79° ?—Ed.

It occupied us until the 6th of August. We found a solid pack extending from Jones to Murchison Sounds, between Clarence Head and Northumberland Island. To the w. the ice still invested the American shore, extending some 20 m. from Cape Isabella. Between this and Mittie Island was a solid surface, the curved shore line occupied by an extensive glacier.

After endeavouring several times to bore we were forced to make Hakluyt Island on the Greenland side, and landed there to rest and renew our stock of provisions. The pack still filled the channel between that island and Cape Parry; and it was only with extreme effort that we were able to carry our boat over the ice. We had approached in this manner within 10 m. of the latter point, when seeing no chance of success, the winter rapidly advancing upon us, I reluctantly gave orders for our return to the brig. During this journey, which was full of exciting contingencies, we passed over the track of Bylot and Baffin, the explorers of 1616.

Our preparations for the second winter were modified largely by controlling circumstances. The physical energies of the party had sensibly declined. Our resources were diminished; we had but 50 gallons of oil saved from our summer's seal hunt. We were scant of fuel, and our food, which now consisted only of the ordinary marine stores, was by no means suited to repel scurvy. Our molasses was reduced to 40 gallons, and our dried fruits seemed to have lost their efficiency.

A single apartment was bulkheaded off amidships as a dormitory and abiding room for our entire party, and a moss envelope cut with difficulty from the frozen cliffs made to enclose it like a wall. A similar casing was placed over our deck, and a small tunnelled entry—the tossut of the Esquimaux—contrived to enter from below. We adopted as nearly as we could the habits of the natives, burning lamps for heat, dressing in fox-skin clothing, and relying for our daily supplies on the success of organized hunting parties.

The upper tribes of these Esquimaux had their nearest winter settlement at a spot distant by dog-journey about 75 m. We entered into regular communication with this rude and simple-minded people, combining our efforts with theirs for mutual support and interchanging numerous friendly offices. Bear-meat, seal, walrus, fox, and ptarmigan were our supplies: they were eaten raw, with a rigorous attention to their impartial distribution.

With the dark months, however, these supplies became very scanty. The exertions of our best hunters were unavailing; and my personal attempts to reach the Esquimaux failed, less on account of the cold (minus 52°) than the ruggedness of the ice, the extreme darkness, and the renewal of tetanic diseases among our remaining dogs. Our poor neighbours, however, fared worse than ourselves: famine, attended by frightful forms of disease, reduced them to the lowest stages of misery and emaciation.

Our own party was gradually disabled. Mr. Brooks and Mr. Wilson, both of whom had lost toes by amputation, manifested symptoms of a grave character. William Morton was severely frozen, and we were deprived of the valuable services of the surgeon by the effects of frost bite, which rendered it necessary for him to submit to amputation. Scurvy with varying phases gradually pervaded our company, until Mr. Bonsall and myself only remained able to attend upon the sick, and carry on the daily work of the ship—if that name could still appropriately designate the burrow which we inhabited. Even after this state of things had begun to improve, the demoralizing effects of continued debility and seemingly hopeless privation were unfavourably apparent among some of the party. I pass from this topic with the single remark, that our ultimate escape would have been hazarded, but for the often painfully enforced routine, which the more experienced among us felt the necessity of adhering to rigorously under all circumstances.

In the latter part of March, the walrus again made their appearance among the broken ice to the south, and we shared with the Esquimaux the proceeds of the hunt. The hæmorrhages which had much depressed our party subsided, and we began slowly to recover our strength. The sun came back to us on the 21st of February, and by the 18th of April the carpenter and several others were able to resume their duties.

In view of contingencies which I had long apprehended, I found it necessary at last to abandon the brig. We had already consumed for firewood her upper spars, bulwarks, deck sheathing, stanchions, bulk heads, hatches, extra strengthening timbers;—in fact everything that could be taken without destroying her sea worthiness. The papers which I append show the results of the several surveys made at this time by my orders. It will be seen from them, that we had but a few weeks' supply left of food or fuel; that the path of our intended retreat was one solid plain of ice, and that to delay a third winter, while it could, in no way, promote the search after Sir John Franklin, would prove fatal to many at least of our party.

Our organization for the escape was matured with the greatest care. Three boats, two of them whale-boats, 24 feet in length, and the third a light cedar dingy of 13 feet, were mounted upon runners, cut from the cross beams of the vessel, and bolted to prevent the disaster of breakage. These runners were 18 feet in length and shod with hoop iron. No nails were used in their construction: they were lashed together so as to form a pliable sledge; and upon it the boats were cradled, so as to be removable at pleasure.

A fourth sledge with a team of dogs was reserved for the transport of our sick, four of whom were still unable to move, and for carrying on our stock of provisions. An abandoned Esquimaux hut, about 35 miles from the brig, was fitted up as well as our means permitted, to serve as an *entrepôt* of stores and a wayside shelter for those of the party who were already broken down, or might yield to the first trials of the journey.

The cooking utensils were made from our old stove-pipe. They consisted of simple soup boilers, enclosed by a cylinder to protect them from the wind. A metal trough to receive fat, with the aid of moss and cotton canvas, enabled us to keep up an active fire. My provisions were packed in waterproof bags, adapted in shape to the shear of the boats, and in no case rising above the thwarts. They consisted, with the exception of tea, coffee, and small stores for the sick, exclusively of melted fat and powdered biscuit.

The clothing was limited to a fixed allowance. Mocassins for the feet were made of our woollen carpeting, which had been saved for the purpose; and numerous changes of dry blanketsocks were kept for general use. For bedding, our buffalo robes were aided by eider down, quilted into coverlids; the experience of former travel having assured me that, next to diet and periodical rest, good bedding and comfortable footgear were the most important things to be considered.

I took upon myself the office of transporting the sick and our reserve of provisions, employing for this purpose a dog-sledge and our single team of dogs. I carried down my first load of stores in April, and on the 15th of May began the removal of the sick. By the middle of June, all our disabled men and some 1200 lbs. of stores had in this manner been transferred by a series of journeyings equal in the aggregate to 1100 miles.

On the 17th of May, having authenticated by appropriate surveys the necessities of our condition, and made all our preparations for the journey, the sledge-boats left the vessel, dragged by the officers and men under the immediate charge of Mr. Henry Brooks, an appointment which he fulfilled with unswerving fidelity and energy.

My collections of Natural History were also carried as far as the sick station at Anoatok; but under a reluctant conviction that a further effort to preserve them would risk the safety of the party, they were finally abandoned. It is grateful to me to recollect the devotion of my comrades, who volunteered to sacrifice shares of both food and clothing to secure these records of our labours.

We were able, not without difficulty, to carry on our chronometers, and the various instruments, magnetic and others, which might allow me still to make and verify our accustomed observations. We left behind the theodolite of the United States Coast Survey and the valuable self-registering barometric apparatus furnished by the American Philosophical Society. Our library, including those portions which had been furnished by the Government and by Mr. Grinnell, as well as my own, were necessarily sacrificed. We preserved only the documents of the expedition.

The first portions of our journey filled me with misgivings, as the weakness of the party showed itself in dropsical swellings and excessive difficulty of respiration. In spite of a careful system of training, the first exposure to temperatures ranging about zero and below it, was to an invalid party extremely trying; and for the first eight days, the entire distance accomplished from the ship did not exceed 15 m. Although the mean rate of transportation was afterwards increased, it never exceeded 3½ m. a day over ice. Some idea may be formed of the nature of this journey from the fact that every 3½ m. thus attained, cost us from 12 to 15 m. of actual travel.

To sustain the party by the aid of fresh food required dog-journeys to the South settlements of the Esquimaux, distant from us about 75 m. I found it necessary also to return from time to time to the brig with the view of augmenting our supplies. My last visit to her was on the 8th of June, for the purpose of procuring some pork to serve for fuel. She was then precisely as when we left her on the 17th of May, immovably frozen in, with 9 ft. of solid ice under her bows. We availed ourselves of the occasional facilities which these visits allowed us to increase our stock of bread, of which we succeeded in baking 480 lbs.

Continuing our southern progress, we neared Littleton Island. Our sick, first left at Anoatok, were gradually brought down to the boats, as some of them gained strength enough to aid in the labour of dragging. The condition of the ice, as it became thinner and decaying, made this labour more difficult, and in the course of our many breaks through, several of the party narrowly escaped being carried under by the tides. In the effort to liberate our sledges from the broken ice after one of these accidents, acting-carpenter Olsen received an internal injury: paralysis of the bladder was rapidly followed by tetanic symptoms, and he died on the 12th of June, three days after his attack. He has left behind him a young wife, who depended entirely upon him for support. He was buried upon Littleton Island, opposite a Cape which bears his name.

From this stage of our journey up to the time of reaching the first open water, which was near Cape Alexander, we were comforted by the friendly assistance of the Esquimaux of *Etah*. These people faithfully adhered to the alliance which we had established during the winter. They brought us daily supplies of birds, helped us to carry our provisions and stores, and in their daily intercourse with us exhibited the kindest feeling and most rigid honesty. When we remembered that they had been so assuming and aggressive upon our first arrival that I was forced to seize their wives as hostages for the protection of our property, their present demeanour was not without its lesson. Once convinced of our superiority of power, and assured of our disposition to unite our resources with theirs for mutual protection and support, they had relied upon us implicitly, and strove now to requite their obligations towards us by ministering to our wants.

We left them on the 18th of June at the margin of the floe. In 31 days we had walked 316 m., and had transported our boats over 81 m. of unbroken ice. The men, women, and children of the little settlement had also travelled over the ice to bid us good-bye, and we did not part from them without emotion.

The passage between this point and one 10 m. N.W. of Hakluyt Island was in open water. It was the only open water seen north of Cape York, in lat. 75° 59′. We ran this under sail in a single day, hauling upon the ice to sleep. This ice was a closed pack, hanging around the north and south channels of Murchison Sound, and seemingly continued to the westward. The land-ices were still unbroken, and we were obliged to continue our journey by alternate movements over ice and water. So protracted and arduous were these that, between the 20th of June and the 6th of July, we had advanced but 100 m.

Our average progress was about 8 m. a day, stopping for our hunting parties and for sleep. Great care was taken not to infringe upon the daily routine. We had perpetual daylight; but it was my rule, rarely broken even by extreme necessity, not to enter upon the labours of a day until we were fully refreshed from those of the day before. We halted regularly at bedtime and for meals; the boats, if afloat, were drawn up; the oars always disposed on the ice as a platform for the stores; our buffalo skins were spread, each man placed himself with his pack according to his number; the cook for the day made his fire, and the ration, however scanty, was formally measured out. Prayers were never intermitted and very seldom grace before meals. I believe firmly, that to these well-ordered observances we are largely indebted for our final escape.

As we moved onward we were forced to rely exclusively on our guns for a supply of food. We suffered when off the coast immediately N. of Wolstenholme Sound, from a scarcity of game, and were subjected to serious illness in consequence. But at Dalrymple Island, a little farther s., we recruited rapidly on eggs of the eider-duck, and from this point to Conical Rock we found birds in abundance. Again, at the most uncertain period of our passage, when our stock of provisions was nearly exhausted, we were suddenly arrested in our course by high and rugged land-ice, which hugged a glacier near Cape Dudley Digges. We were too weak to drag our boats over this barrier, and were driven in consequence to land under the cliffs. To our joyful surprise we found them teeming with animal life. This transition from enfeebling want to the plenty which restored our strength, we could not but attribute to the direct interposition of Providence. The Lumme (Uriæ Brunichii et Troili) was the fowl which we here found in greatest numbers. We dried upon the rocks about 200 lbs. of its meat, which we carefully saved for the transit of Melville Bay.

The rest of the coast, except under the glaciers, was followed with less difficulty. We found peat of good quality and plenty of food. Our daily allowance of birds was 12 to a man; they were boiled into a rich soup, to which we added a carefully-measured allowance of 6 oz. of bread.

On the 21st we reached Cape York, and, finding no natives, made immediate preparations for crossing Melville Bay. An extended view showed the land-ice nearly unbroken, and a large drift of pack to the southward and westward. A beacon-cairn was built, and strips of red flannel fastened to a flag-staff so placed as to attract the attention of whalers or searching parties. I deposited here a notice of our future intentions, a list of our provisions on hand, and a short summary of the discoveries of the cruise.

Up to the 26th of July, our traverse of Melville Bay was along the margin of the land-ice, with only twice a resort to portage. We came then upon comparatively open drift, extending to the southward and westward, which, after mature consideration, I determined to follow. There were arguments in favour of a different course, perhaps for the time less hazardous, but the state of health among my comrades admonished me that it was best to encounter the risks that were to expedite our release. The reduced bulk of our stores enabled us now to consolidate the party into two boats, breaking up the remaining one for fuel, of which we were in need. Our lengthened practice of alternating boat and sledge management, had given us something of assurance in this mode of travel, and we were besides familiarized with privation. It was a time of renewed suffering, but in the result we reached the N. coast of Greenland, near Horse Head, on the 3rd of August; and following thence the inside passage, arrived on the 6th at Upernavik, 83 days after leaving the 'Advance.' We did not intermit our observations by Sextant and Artificial-horizon, as we came down the bay, and succeeded in adding to our meteorological and magnetic registers. These, including a re-survey of the coast as laid down in the Admiralty charts, will be included in a special report to the Department.

We were welcomed at the Danish Settlements with characteristic hospitality. The chief trader, Knud Gelmeyden Fleischer, advanced to us from the stores of the Royal Greenland Trading Company at Upernavik whatever our necessities required; and when we afterwards reached Godhaven, the seat of the Royal Inspectorate, Mr. Olrik, the inspector, lavished the kindest attentions upon our party.

We had taken passage at Upernavik in the Danish brig 'Marianne,' then upon her annual visit to the Greenland Colonies, Captain Amandsen, her very courteous and liberal commander, having engaged to land us at the Shetland Isles on his return route to Copenhagen; but touching for a few days at Disco, we were met by the vessels which had been sent after us under the command of Lieutenant Hartstene. I have no words to express the gratitude of all our party towards that noble spirited officer and his associates, and towards our countrymen at home, who had devised and given effect to the expedition for our rescue.

I have the honour to be,
Very respectfully, Sir,
Your most obedient servant,
(Signed) E. K. KANE.

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## No. I.

(Copy.)

*Hon. Secretary of the Navy, Washington.*

Fiskenaes, South Greenland, July 6, 1853.

SIR,—We reached this place on the 5th instant, after a run of twelve days from St. John's, Newfoundland.

By means of special facilities extended to our expedition by the Danish Government, we have been able to obtain from the Royal Greenland Company supplies of fresh dried cod-fish, as also a native Esquimaux as hunter. This boy will take with him his kyak, and is expected to prove of essential service.

We have as yet encountered no ice. It is my intention to stop at Sukkertoppen to purchase reindeer skins. E. K. K.

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## No. II.

(Copy.)

Upernavik, North Greenland, July 24, 1853.

SIR,—I have the honour to report the safe arrival of myself and party at Upernavik.

Being much delayed by calms, I deemed it unadvisable to stop at Godhaven, but have lost no time in proceeding north. Our full complement of dogs is now on board, and we leave in a few hours for Melville Bay.

I have engaged the valuable services of Mr. Carl Johan Petersen, late interpreter to Captain Penny's expedition of search. If we should meet the Esquimaux north of Cape Alexander, he will be essential to our party.

The officers and men are in excellent health and spirits.

E. K. K.

## No. III.

(Copy.)

Deposited in Cairn, lat. 78° 24′ N., Aug. 7, 1853.

SIR,—I have the honour to report our successful transit of Melville Bay and safe arrival within the waters of Sir Thomas Smith Sound.

This letter will be deposited in a cairn on Littleton Island, in latitude 78° 24′ N. The prospects of a farther progress have led me to leave near this spot a metallic life-boat, with a supply of stores, as a means of retreat, should our vessel be imprisoned in the ice.

The course of our party will be from this date along the coast of Greenland, trending to the north and east. If a possible chance presents itself of forcing the brig into a northern sea, I will endeavour, before availing myself of such a chance, to leave another cairn announcing my point of departure.

Our officers and men are in excellent health and spirits, and no cases have yet occurred of scurvy or other serious disease.

After the brig is obliged to go into winter-quarters, I intend to start with a carefully equipped party to establish a depôt for the final labours of next season.

Our dogs are in admirable condition, and well broken to harness.

E. K. K.

## II.—*Letter from Chief Factor* JAMES ANDERSON, *to Sir George Simpson*, F.R.G.S., *Governor in Chief of Rupert Land.*

Communicated by the HUDSON BAY COMPANY.

*Read*, January 28, 1856.*

*Fort Resolution*, Sept. 17, 1855.

SIR,—I beg to state for your information that the expedition you were pleased to entrust to my command returned here last night.

After having descended Back's Great Fish River, and explored the mainland and islands as far as Maconochie Island, undoubted traces of the missing party were found at Montreal Island; but, I regret to say, that neither the remains of our unfortunate countrymen, nor any persons', were discovered. My previous despatches would have informed you that I arrived at Fort Resolution late on the 20th June: the three canoes, built under the superintendence of Messrs. Stewart and Ross, were all ready; they were of an excellent model, the woodwork very strong, but the bark, though

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* *See* Map to Sir George Back's paper in vol. vi. p. 1, of 'Journal of Royal Geographical Society.'—ED.